REMARKS

Claims 20-39 are pending. By this Amendment, claims 20, 23, 25, 28, 31 and 32 are amended, and claims 40-41 are canceled. Reconsideration in view of the above amendments and the following remarks is respectfully requested.

The Office Action objects to the Declaration in that it is not in compliance with 37 C.F.R. 1.67(a). Applicants submit herewith a new Declaration in compliance with 37 C.F.R. 1.67(a). Accordingly, withdrawal of the objection to the Declaration is respectfully requested.

The Office Action rejects claims 1 and 18-41 under 35 U.S.C. §112, second paragraph, as indefinite for failing to particularly point out and distinctly claim this subject matter which Applicants regard as the invention. Further to a February 20 telephone conference with Examiner Padgett, it was clarified that claims 20-41 where pending at the time of the rejection. However a typographical error indicated that claims 1 and 18-41 are rejected. In actuality, the Office Action should read claims 20-41 are rejected under 35 U.S.C. §112, second paragraph. This rejection is respectfully traversed.

The Office Action contends that the phrasing describing the positioning and cross-section of the plasma is vague, indefinite and confusing. Applicants respectfully disagree. In particular, and at least with reference to Fig. 2 and pages 7-8 of the specification:

> The high density plasma region is formed in the vicinity of the gas supply port in the form of pore or slit.....The plasma in the form of plane can be formed by providing a gas exhaust nozzle (gas supply port) in the form of slit. Also, it is possible to generate a plasma in the form of plane by arranging pores one-dimensionally. In case of arranging pores one-dimensionally, the distance between the adjacent pores should be less than ten times, preferably less than twice, as long diameter of the pores (the average diameter calculated from length of the major axis and the length of the minor axis in the case where the pore is not a circle. The diameter

> of the pores is 10mm or shorter, preferably 5mm or shorter. In the case where the gas supply port is in the form of slit, width of the slit is 10mm or shorter, preferably 5mm or shorter. The pores are advantageous in that a higher intensity of electric field and a higher density of plasma are produced by the pores rather than by the slit, however, the slit is advantageous in that more uniform plasma is produced by the slit rather than by the pores. In addition, as the width of the slit or the diameter of the pores is decreased, the plasma density increases, however, an upper limit of the gas flow rate decreases. In the case where the width of the slit or the diameter of the pores is to small, the gas flow rate becomes large to increase the plasma density by the local increase of the pressure and to make the plasma unstable. A plasma in the form of a plane having a length of several meters can be produced by lengthening the length of the slit or increasing the number of pores since the length of the plasma has no theoretical upper limit.

For example, the specification states that it is possible to generate a plasma in the form of a plane by arranging pores "one-dimensionally." Therefore, the sheet-like plasma 109 is formed by the plurality of gas inlets instead of a single slit-type gas inlet 111. Accordingly, and with reference at least to Fig. 2, Applicants respectfully submit that the relationship of the positioning and cross-section of the plasma is definite. Specifically, claim 20 recites "said plasma extends from the first electrode toward the second electrode and a cross-section of the plasma along planes of the first and second electrodes has a length along the first direction and width along a second direction perpendicular to the first direction for the cross section is elongated in the first direction and the length is longer than the width." Thus, with reference to Fig. 2, the linear one-dimensional

plasma region 109 has a length that extends in a first direction that is longer than the width.

Accordingly, Applicants respectfully submit that the claims are definite and the relationship of the plasma is clear. Withdrawal of the rejection of claims 20-41 under 35 U.S.C. §112 is respectfully requested.

The Office Action rejects claims 20-41 under the judicially created doctrine of obviousness-type double patenting as unpatentable over claims 1-25 of U.S. Patent No. 6,001,431. Furthermore, claims 20-34, 36, 38 and 40 are rejected under the judicially created doctrine of obviousness-type double patenting as unpatentable over claims 1-2, 4-5, 7-9 and 11-15 of U.S. Patent No. 6,001,432 and claims 20-34, 36, 38 and 40 under the judicially created doctrine of obviousness-type double patenting in view of claims 1, 3-4, 7, 10, 13 and 17 or claims 1-2, 7-9, 10-12, 16-17, 20-24 and 27-68 of U.S. Patent No. 5,766,696 or U.S. Patent No. 6,183,816 in view of Jansen et al. These rejections are respectfully traversed.

Applicants respectfully submit that the instant claims are patentably distinguishable over the claims of the cited patents. Withdrawal of the rejection of the obviousness-type double patenting rejections is respectfully requested.

Claims 25-33, 37, 39 and 41 are rejected under 35 U.S.C. §103 (a) as unpatentable over Jansen et al. This rejection is respectfully traversed.

Jansen et al is directed toward a hollow cathode array and method of cleaning sheet stock therewith. In particular, an array of hollow cathodes can be made by mounting a housing connected to a source of plasma precursor gas and a source of power in a vacuum chamber, said housing having a plurality of uniformly spaced openings in a wall thereof into which a plasma can be generated. A substrate to be treated is mounted parallel to and spaced a preselected distance from said openings. In operation, a plurality of plasma

torches are created extending from the openings which can plasma etch and remove coatings on said substrate.

However, at least with reference to Fig. 1 of Jansen et al, although the gas inlets of Jansen appear to be arranged in one direction, Jansen fails to teach, suggest or disclose generating a plasma of which a cross section is elongated in the first direction as recited in claims 20 and 25. Furthermore, Jansen fails to teach, suggest or disclose a region of plasma being elongated more in the first direction than in the second direction as recited in claim 23. In other words, while the plasma region is formed by a plurality of gas inlets in the present invention, it appears that a plurality of plasma regions are formed in correspondence with a plurality of gas inlets in Jansen. Additionally, with respect to claims 28 and 31, Jansen at least fails to teach, suggest, or disclose the claimed opening elongated a first direction, the plasma which has a cross section elongated in the first direction, and changing a location of a substrate along a second direction.

Accordingly, since the cited reference fails to teach, suggest or disclose each and every feature of the claimed invention, the reference fails to render obvious claims 25-33, 37, 39 and 41. Withdrawal of the rejection of claims 25-33, 37, 39 and 41 under 35 U.S.C. §103 (a) is respectfully requested.

The Office Action rejects claims 23-24, 36, 38 and 40 under 35 U.S.C. §103 (a) as unpatentable over Jansen et al and further in view of David et al and optionally considering Yanagihara et al and Takahashi et al. This rejection is respectfully traversed.

Applicants respectfully submit that the David, Yanagihara and Takahasi references, taken either only or in combination, fail to overcome the deficiencies of Jansen et al as note above. Accordingly, since the cited references, either alone or in combination, fail to teach, suggest or disclose each and every aspect of the claims, the references fail to render obvious claims 23-24, 36, 38 and 40.

Withdraw of the rejection of claims 23-24, 36, 38 and 40 under 35 U.S.C. §103 (a) is respectfully requested.

The Office Action rejects claims 20-41 under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonable convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. This rejection is respectfully traversed.

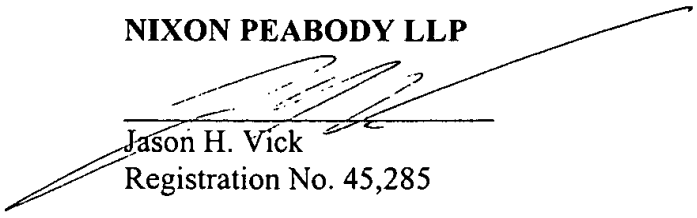
Applicants respectfully submit, that at least in relation to the 35 U.S.C. §112, second paragraph, rejection, the specification fully supports, at least on pages 7 and 8, the subject matter recited in claim 20. Accordingly, withdrawal of the rejection of claims 20-41 under 35 U.S.C. §112, first paragraph, is respectfully requested.

Applicants respectfully submit the application is in condition for allowance. Favorably reconsideration and prompt allowance are respectfully requested.

Should the Examiner believe that anything further is desirable in order to place to the application in even better condition for allowance, the Examiner is encourage to contact Applicants undersigned representative at the telephone number listed below.

Respectfully submitted,

NIXON PEABODY LLP



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MARKED UP VERSION OF THE CLAIMS

20. (Twice Amended) A process comprising the steps of:

[preparing] providing first and second electrodes opposed to each other in a reaction chamber, said first electrode having a plurality of gas inlets arranged in a first direction;

introducing a gas through said plurality of gas inlets into said reaction chamber;

generating a plasma of said [reactive] gas by applying a voltage between said first and second electrodes wherein said plasma extends from the first electrode toward the second electrode and a cross section of the plasma along planes of the first and second electrodes has a length along the first direction and a width along a second direction perpendicular to the first direction where the cross section is elongated in the first direction and the length is longer than the width;

placing a substrate between said first and second electrodes; and

changing a relative location of the substrate with the plasma in the second direction.

23. (Twice Times Amended) A process for comprising the steps of:

[preparing] providing first and second electrodes opposed to each other in a reaction chamber, said first electrode having a plurality of gas inlets arranged in a first direction;

introducing a gas through said plurality of gas inlets into said reaction chamber;

generating a plasma of said [reactive] gas by applying a voltage between said first and second electrodes wherein said first electrode is grounded;

placing a substrate adjacent to said second electrode;

forming a diamond-like carbon film on the substrate by plasma chemical vapor deposition using the plasma; and

moving said substrate while forming the diamond-like carbon film on the substrate in a second direction perpendicular to said first direction,

wherein the plasma extends from the first electrode toward the second electrode, and a region of the plasma is elongated more in the first direction than in the second direction.

25. (Twice Amended) A process comprising the steps of:

[preparing] providing first and second electrodes opposed to each other in a reaction chamber, said first electrode having a plurality of gas inlets arranged in a first direction;

introducing a gas through said plurality of gas inlets into said reaction chamber;

generating a plasma of said gas by applying a voltage between said first and second electrodes wherein said plasma has an elongated cross section along the first direction;

placing a substrate between said first and second electrodes; and

treating said substrate with said plasma while changing a relative location of the substrate with respect to the plasma in a second direction perpendicular to the first direction,

wherein a gap between said first and second electrodes is 30 mm or less, and the substrate is not in contact with the plasma during the treatment with the plasma.

28. (Twice Amended) A process comprising the steps of:

[preparing] providing first and second electrodes opposed to each other in a reaction chamber, said first electrode having at least one inlet having an opening elongated in a first direction;

introducing a gas through said at least one inlet into said reaction chamber;

generating a plasma of said gas by applying a voltage between said first and second electrodes wherein at each said at least one inlet said plasma extends from the first electrode toward the second electrode and at each said at least one inlet a cross section of the plasma has a length along the first direction and a width along a second direction perpendicular to the first direction and parallel to the electrodes where the length is longer than the width;

placing a substrate between said first and second electrodes;

treating said substrate with said plasma, and

changing a relative location of the substrate with respect to the plasma in the second direction during the treatment with the plasma,

wherein a gap between said first and second electrodes is 30 mm or less.

31. (Amended) A process comprising the steps of:

[preparing] providing first and second electrodes opposed to each other in a reaction chamber, said first electrode having at least one inlet having an opening elongated in a first direction;

introducing a gas through said at least one inlet into said reaction chamber;

generating a plasma of said gas by applying a voltage between said first and second electrodes wherein at each said at least one inlet said plasma extends from the first electrode toward the second electrode and at each said at least one inlet a cross section of the plasma has a length along the first direction and a width along a second direction perpendicular to the first direction and parallel to the electrodes where the length is longer than the width;

placing a substrate between said first and second electrodes;

forming a film on the substrate by plasma chemical vapor deposition by using the plasma, and

changing a relative location of the substrate with respect to the plasma in the second direction during the treatment with the plasma.

32. (Amended) The process according to claim 31 wherein [said gap] a gap between said first and second electrodes is 10 mm or less.